

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended): A process ~~Process~~ for the preparation of mono(fluoroalkyl)- or bis(fluoroalkyl)phosphoric acid, mono(fluoroalkyl) or bis(fluoroalkyl) phosphates, or ~~and~~ the corresponding phosphoranes thereof, comprising:

reacting a compound which is at least the reaction of a bis(fluoroalkyl)phosphinic acid or a salt or ester thereof, or a (fluoroalkyl)phosphonic acid or a corresponding derivative or salt or ester thereof, of these acids with anhydrous hydrogen fluoride,

wherein said mono(fluoroalkyl) and bis(fluoroalkyl) phosphates are compounds in which the phosphorus carries five or four fluorine atoms in addition to the one or two fluoroalkyl groups,

said corresponding phosphoranes contain four or three fluorine atoms bonded directly to the phosphorus atom, and

the fluoroalkyl groups are straight-chain or branched alkyl or cycloalkyl groups which are fluorinated and which contain no double bonds, or one, two or three double bonds, and

said cycloalkyl groups are saturated, or partially or fully unsaturated, which are optionally substituted by C₁- to C₆-alkyl groups.

2. (Currently Amended): A process ~~Process~~ according to Claim 1, ~~characterised in that use is made of~~ wherein said compound is a bis(fluoroalkyl)phosphinic acid or a salt or ester thereof, and said bis(fluoroalkyl)phosphinic acid or a salt or ester thereof has ~~corresponding derivative in which the two fluoroalkyl groups~~ are identical or different.

3. (Currently Amended): A process ~~Process~~ according to Claim 1, ~~characterised in that use is made of a~~ wherein said bis(fluoroalkyl)phosphinic acid or [[a]] salt or ester thereof, or said (fluoroalkyl)phosphonic acid or salt or ester thereof have a corresponding derivative of these acids in which the perfluoroalkyl groups having contain 1 to 20 C atoms and that are straight-chain or branched.

4. (Currently Amended): A process ~~Process~~ according to claim 1, ~~characterised in that the derivative of~~ wherein said compound is a salt of a bis(fluoroalkyl)phosphinic acid with a mono-, di- or trivalent metal cation or a salt of a (fluoroalkyl)phosphonic acid ~~employed is the salt~~ with a mono-, di- or trivalent metal cation.

5. (Currently Amended): A process ~~Process~~ according to Claim 4, ~~wherein said characterised in that the~~ mono-, di- or trivalent metal cation is ~~selected from the group~~ Li^+ , Na^+ , K^+ , Mg^{2+} , Ca^{2+} , Ba^{2+} , Zn^{2+} , Cu^{2+} or Al^{3+} .

6. (Currently Amended): A process ~~Process~~ according to claim 1, ~~wherein said compound is a salt of~~ characterised in that the derivative of bis(fluoroalkyl)phosphinic acid with a mono- or divalent organic cation or a salt of (fluoroalkyl)phosphonic acid ~~employed is the salt with a mono- or divalent organic cation.~~

7. (Currently Amended): A process ~~Process~~ according to Claim 6, ~~wherein said characterised in that the~~ mono- or divalent organic cation is ~~selected from the group~~ tetraalkylammonium, tetraalkylphosphonium, triarylalkylphosphonium, guanidinium, pyrrolidinium, pyridinium, imidazolium, piperazinium, or hexamethylenediammonium.

8. (Currently Amended): A process ~~Process~~ according to claim 1, ~~characterised in that the derivative of~~ wherein said compound is an ester of bis(fluoroalkyl)phosphinic acid or (fluoroalkyl)phosphonic acid ~~employed is an ester of bis(fluoroalkyl)phosphinic acid or (fluoroalkyl)phosphonic acid.~~

9. (Currently Amended): A process ~~Process~~ according to claim 1, ~~wherein said compound is a salt of~~ characterised in that the derivative of bis(fluoroalkyl)phosphinic acid or (fluoroalkyl)phosphonic acid ~~employed is the salt~~ with a polycation.

10. (Currently Amended): A process ~~Process~~ according to Claim 9, ~~wherein said characterised in that the~~ polycation is ~~a selected from the group of polyammonium cation~~ eations.

11. (Currently Amended): A process ~~Process~~ according to claim 1, wherein said ~~characterised in that the~~ reaction is carried out in a polar solvent ~~or without a solvent~~.

12. (Currently Amended): A process ~~Process~~ according to claim 1, wherein said ~~characterised in that the~~ reaction is carried out at a temperature of -20°C to 100°C.

13. (Currently Amended): A process ~~Process~~ according to claim 1, wherein said ~~characterised in that the~~ reaction is carried out with 4- to 100-fold the molar amount of hydrogen fluoride.

14. (Currently Amended): A process ~~Process for the preparation of phosphoranes~~ according to claim 1, wherein said process is for the preparation of phosphoranes, and ~~characterised in that the~~ mono- or bis(fluoroalkyl) phosphate formed after the reaction with hydrogen fluoride is reacted with a strong electrophilic reagent or a strong Lewis acid.

15. (Currently Amended): A process ~~Process~~ according to Claim 14, wherein said ~~characterised in that the~~ reaction is carried out with an electrophilic reagent or a Lewis acid selected from ~~the group~~ (CH₃)₃SiCl, SO₂Cl₂, SbF₅, AlCl₃, VF₅, SbCl₅, NbF₅, AsF₅, BiF₅, AlF₃ and TaF₅.

16. (New): A process according to claim 1, wherein said reaction is carried out without a solvent.

17. (New): A process according to claim 1, wherein said fluoroalkyl groups are in each case selected from

difluoromethyl, trifluoromethyl, pentafluoroethyl, pentafluoropropyl, heptafluoropropyl, pentafluorobutyl, heptafluorobutyl, nonafluorobutyl, C₅H₄F₇, C₅H₂F₉, C₅F₁₁, C₆H₄F₉, C₆H₂F₁₁, C₆F₁₃, C₇H₄F₁₁, C₇H₂F₁₃, C₇F₁₅, C₈H₄F₁₃, C₈H₂F₁₅, C₈F₁₇, C₉H₄C₁₅, C₉H₂C₁₇, C₉F₁₉, C₁₀H₄F₁₇, C₁₀H₂F₁₉, C₁₀F₂₁, C₁₁H₄F₁₉, C₁₁H₂F₂₁, C₁₁F₂₃, C₁₂H₄F₂₁, C₁₂H₂F₂₃, C₁₂F₂₅,

fluorinated allyl, 2- butenyl, 3-butenyl, isobutenyl, sec-butenyl, furthermore 4-pentenyl, isopentenyl, hexenyl, heptenyl, octenyl, -C₉H₁₇, or -C₁₀H₁₉ to -C₂₀H₃₉, or a fluorinated saturated or partially or fully unsaturated cycloalkyl groups having 3-7 C atoms, optionally substituted by substituted by C₁- to C₆-alkyl groups.

18. (New): A process according to claim 17, wherein said cycloalkyl groups are selected from fluorinated cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclopentenyl, cyclopenta-1,3-dienyl, cyclohexenyl, cyclohexa-1,3-dienyl, cyclohexa-1,4-dienyl, phenyl, cycloheptenyl, cyclohepta-1,3-dienyl, cyclohepta-1,4-dienyl or cyclohepta-1,5-dienyl, which are in each case optionally substituted by C₁- to C₆-alkyl groups.

19. (New): A process according to claim 1, wherein said fluoroalkyl groups are straight-chain or branched perfluoroalkyl groups having 1 to 20 C atoms.

20. (New): A process according to claim 1, wherein said fluoroalkyl groups are straight-chain or branched perfluoroalkyl groups having 1 to 12 C atoms.

21. (New): A process according to claim 20, wherein at least one of said fluoroalkyl groups is pentafluoroethyl, nonafluorobutyl or perfluoroprop-1-enyl.

22. (New): A process according to claim 1, wherein said reaction is carried out at a temperature of 0°C to room temperature.

23. (New): A process according to claim 1, wherein said reaction is carried out with 5- to 25-fold molar amount of hydrogen fluoride.

24. (New): A process according to claim 1, wherein said compound is:
lithium bis(pentafluoroethyl)phosphinate,
potassium bis(pentafluoroethyl)phosphinate,
tetraethylammonium bis(pentafluoroethyl)phosphinate,
1-ethyl-3-methylimidazolium bis(pentafluoroethyl)phosphinate,

tributylethylphosphonium bis(pentafluoroethyl)phosphinate,
1-ethyl-3-methylimidazolium bis(pentafluoroethyl)tetrafluorophosphate,
tributylethylphosphonium bis(pentafluoroethyl)tetrafluorophosphate,
ethyl perfluoroprop-1-enyl-fluorophosphonate, or
methyl bis(pentafluoroethyl)phosphinate.